

**WHAT IS CLAIMED IS:**

- 2           1.     A reinforced pallet assembly comprising:
  - 3           a first pallet deck having a first outer member and a first intermediate
  - 4           member, each having a one of a first pair of mating cross-rib surfaces which are
  - 5           mounted together to define a first plurality of box-beam sections within the first
  - 6           pallet deck;
  - 7           a second pallet deck having a second outer member and a second
  - 8           intermediate member, each having a one of a second pair of mating cross-rib
  - 9           surfaces which are mounted together to define a second plurality of box-beam
  - 10          sections within the second pallet deck;
  - 11          at least one reinforcement member disposed between the second outer
  - 12          member and the second intermediate member for providing stiffness thereto; and
  - 13          a plurality of columns extending between the first intermediate member and
  - 14          the second intermediate member.
- 15          2.     The reinforced pallet assembly of claim 1, wherein the first and second
- 16          pallet decks and columns comprise a plastic material and wherein the at least one
- 17          reinforcement member comprises a metal material.
- 18          3.     The reinforced pallet assembly of claim 1 wherein the columns include
- 19          a first column portion projecting from the first intermediate portion, and a second
- 20          column portion projecting from the second intermediate portion and attached to the
- 21          first column portion.
- 22          4.     The reinforced pallet assembly of claim 1 wherein the second pallet
- 23          deck is defined by a unitary construction comprising a plurality of peripheral rail
- 24          members and at least one cross-rail extending between a pair of peripheral rail
- 25          members.
- 26          5.     The reinforced pallet assembly of claim 4 wherein the at least one
- 27          reinforcement member is disposed within the at least one cross-rail of the second
- 28          pallet deck.

1           6.    The reinforced pallet assembly of claim 4 wherein the at least one  
2 reinforcement member is disposed within the peripheral rail members of the second  
3 pallet deck.

4           7.    The reinforced pallet assembly of claim 1 wherein the first pallet deck  
5 further comprises a second reinforcement member disposed between the first outer  
6 member and the first intermediate member which is oriented generally perpendicular  
7 to the at least one reinforcement member.

8           8.    The reinforced pallet assembly of claim 1, wherein the first pallet deck  
9 includes a second reinforcement member disposed therein extending substantially  
10 along a central axis thereof.

11          9.    The reinforced pallet assembly of claim 1, wherein the second pallet  
12 deck includes a channel within which the at least one reinforcement member is  
13 disposed.

14          10.   A pallet assembly, comprising:  
15           a first pallet member having a first pallet surface including a first plurality  
16 of cross-rib members;

17           a second pallet member disposed adjacent the first pallet member and having  
18 a second pallet surface including a second plurality of cross-rib members  
19 corresponding to the first plurality of cross-rib members, the first and second  
20 plurality of cross-rib members being secured together to form a first pallet deck, the  
21 second pallet member further including a mating surface opposite the second pallet  
22 surface;

23           a first reinforcement member disposed between the first and second pallet  
24 members along a first axis thereof;

25           a third pallet member disposed adjacent the second pallet member and having  
26 a third pallet surface including a third plurality of cross-rib members, the third pallet  
27 member having an other mating surface opposite the third pallet surface;

28           a fourth pallet member disposed adjacent the third pallet member and having  
29 a fourth pallet surface including a fourth plurality of cross-rib members

1 corresponding to the third plurality of cross-rib members, the third and fourth  
 2 plurality of cross-rib members being secured together to form a second pallet deck;  
 3 a second reinforcement member disposed between the third and fourth pallet  
 4 members along a second axis thereof oriented substantially perpendicular to the first  
 5 reinforcement member; and  
 6 a plurality of column portions extending between the second and third pallet  
 7 members.

8 11. The pallet assembly of claim 10 further comprising other  
 9 reinforcement members extending proximate the periphery of the second pallet  
 10 member.

11 12. The pallet assembly of claim 11 wherein the first reinforcement  
 12 member and other reinforcement members are integrally formed to define a unitary  
 13 construction.

14 13. The pallet assembly of claim 10 wherein the mating surface of the  
 15 second pallet member and the other mating surface of the third pallet portion are  
 16 secured together to define the plurality of column portions.

17 14. A reinforced pallet comprising:  
 18 a top deck having a top deck upper surface, a top deck lower surface, and a  
 19 plurality of upper box beam sections disposed between the top deck upper and lower  
 20 surfaces;  
 21 a bottom deck having a bottom deck upper surface, a bottom deck lower  
 22 surface, and a plurality of lower box beam sections disposed between the bottom  
 23 deck upper and lower surfaces, the bottom deck further including at least one  
 24 elongate reinforcement member disposed therein; and  
 25 a plurality of columns extending between and attached to the top deck and  
 26 bottom deck.

27 15. The reinforced pallet of claim 14 wherein the top deck includes first  
 28 column portions projecting downwardly therefrom, and the bottom deck includes  
 29 corresponding second column portions projecting upwardly therefrom corresponding

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1 to and securely mating with the first column portions to define the plurality of  
2 columns.

3 16. The reinforced pallet of claim 14 wherein the bottom deck includes a  
4 peripheral deck rail and at least one cross-rail extending therebetween.

5 17. The reinforced pallet of claim 16 wherein the at least one  
6 reinforcement member is disposed within the at least one cross-rail of the bottom  
7 deck.

8 18. The reinforced pallet of claim 16 wherein the at least one  
9 reinforcement member is disposed within the peripheral rail of the bottom deck.

10 19. The reinforced pallet of claim 14 wherein the top deck includes at least  
11 one other elongate reinforcement member disposed therein and oriented along an  
12 axis generally perpendicular to the at least one elongate reinforcement member.

13 20. The reinforced pallet of claim 14, wherein the top deck includes an  
14 other reinforcement member disposed therein and extending substantially across a  
15 central axis thereof.

16 21. The reinforced pallet of claim 14 wherein the top deck includes a top  
17 member and a mid-top member each having mating corresponding top deck rib  
18 members which define the plurality of upper box beam sections, and further  
19 including a second reinforcement member disposed between the top member and  
20 mid-top member and oriented generally perpendicular to the at least one  
21 reinforcement member.

22 22. The reinforced pallet of claim 14 wherein the bottom deck includes  
23 a bottom member and a mid-bottom member each having mating corresponding  
24 bottom deck rib members which define the plurality of lower box beam sections,  
25 wherein the at least one reinforcement member is disposed between the bottom  
26 member and mid-bottom member.

1           23.    The reinforced pallet of claim 14, wherein the bottom deck includes  
2           a channel within which the at least one reinforcement member is disposed.

3           24.    The reinforced pallet of claim 14, wherein the at least one  
4           reinforcement member has an I-beam cross-section.

5           25.    The reinforced pallet of claim 14, wherein the upper box beam sections  
6           and the lower box beam sections are defined by a plurality of rib members within  
7           each of the top and bottom decks.

8           26.    A reinforced pallet comprising:  
9           a top deck having an top deck upper surface and a top deck lower surface  
10          spaced apart from each other and oriented substantially parallel to each other, the top  
11          deck further including a first plurality of rib members extending between the top  
12          deck upper and lower surfaces;  
13          a bottom deck having a bottom deck upper surface and a bottom deck lower  
14          surface spaced apart from each other and including a second plurality of rib  
15          members extending between the bottom deck upper and lower surfaces;  
16          at least one longitudinally extending reinforcement member disposed  
17          between the bottom deck upper and lower surfaces; and  
18          at least one column member extending between the top deck lower surface  
19          and the bottom deck upper surface and attached therebetween.

20          27.    The reinforced pallet of claim 26, wherein the top deck lower surface  
21          includes at least one first column portion projecting downwardly therefrom, and  
22          wherein the upper bottom surface includes at least one second column portion  
23          extending upwardly therefrom and mating with the first column portion to define the  
24          at least one column member.

25          28.    The reinforced pallet of claim 26 wherein the top deck includes a top  
26          member having a first surface corresponding to the top deck upper surface and a first  
27          opposed surface defined by rib members, the top deck further including a mid-top  
28          member having a second surface corresponding to the top deck lower surface and  
29          a second opposed surface defined by rib member, such that first opposed surface and

1 the second opposed surface are attached to define the first plurality of rib members  
2 extending therebetween.

3 29. The reinforced pallet of claim 26 wherein the bottom deck includes  
4 a bottom member having a first surface corresponding to the bottom deck lower  
5 surface and a first opposed surface defined by rib members, and a mid-bottom  
6 member having a second surface corresponding to the bottom deck upper surface  
7 and a second opposed surface defined by rib members, such that the first and second  
8 opposed surfaces are attached to define the second plurality of rib members  
9 extending therebetween, and wherein the at least one reinforcement member is  
10 disposed between the bottom member and the mid-bottom member.

11 30. The reinforced pallet of claim 26 wherein the bottom deck includes a  
12 peripheral rail and at least one bottom deck cross rail extending therebetween.

13 31. The reinforced pallet of claim 30 wherein the at least one reinforcement  
14 member is disposed within the at least one bottom deck cross-rail.

15 32. The reinforced pallet of claim 30 wherein the at least one reinforcement  
16 member is disposed within the peripheral rail of the bottom deck.

17 33. The reinforced pallet of claim 26, wherein the top deck includes a  
18 second reinforcement member disposed therein and extending substantially across  
19 a central axis thereof.

20 34. The reinforced pallet of claim 26, wherein the top deck includes a  
21 second reinforcement member disposed therein and oriented generally perpendicular  
22 to the at least one reinforcement member.

23 35. The reinforced pallet of claim 26, wherein the bottom deck includes  
24 a channel within which the at least one reinforcement member is disposed.

25 36. The reinforced pallet of claim 26, wherein the at least one  
26 reinforcement member has an I-shaped cross section.

1           37. The reinforced pallet assembly of claim 26, wherein the upper bottom  
2 surface includes a plurality of second column portions extending upwardly  
3 therefrom and mating with the plurality of first column portions to define a plurality  
4 of columns between the second and third members.

5           38. The pallet assembly of claim 26 further comprising a pair of  
6 reinforcement members extending around a periphery of the first pallet deck,  
7 wherein the pair of reinforcement members are oriented substantially parallel to each  
8 other.

9           39. A reinforced pallet assembly, comprising:  
10 a first member having a first lower surface defined by a plurality of  
11 downstanding cross-rib members;  
12 a second member having a second lower surface and also including a second  
13 upper surface defined by a plurality of upstanding cross-rib members corresponding  
14 to the downstanding cross-rib members of the first member and mounted therewith;  
15 a third member spaced apart from the second member, the third member  
16 having a third upper surface and a generally planar third lower surface defined by  
17 a plurality of downstanding cross-rib members, the third upper surface and the  
18 second lower surface having corresponding flanged surfaces securely mounted to  
19 each other to form a plurality of columns;  
20 a fourth member having a fourth upper surface defined by a plurality of  
21 upstanding cross-rib members corresponding to the downstanding cross-rib  
22 members of the third member and mounted therewith;  
23 a reinforcement member disposed between the third member and fourth  
24 member for providing strength thereto; and  
25 at least one column extending between the second and third members.

26           40. A reinforced pallet comprising:  
27 a first deck portion having a first upper surface and a first lower surface  
28 defined by a first plurality of rib members disposed therein; and  
29 a second deck portion having a second lower surface and a second upper  
30 surface defined by a second plurality of rib members disposed therein, the second  
31 plurality of rib members mating with corresponding first plurality of rib members

1 to form a pallet deck, the second deck portion including a plurality of support  
 2 members defining the second lower surface; and  
 3 at least one elongate reinforcement member disposed between the first and  
 4 second deck portions.

5 41. A pallet assembly comprising:  
 6 a first pallet member having a first surface defined by a first plurality of  
 7 cross-rib members;  
 8 a second pallet member having a second surface defined by a second  
 9 plurality of cross-rib members which are mounted to the first plurality of cross-  
 10 members to define a first pallet deck;  
 11 a third pallet member mounted to the second pallet portion by a plurality  
 12 column portions extending therebetween, the third pallet member having a third  
 13 surface defined by a third plurality of cross-rib members;  
 14 a fourth pallet member having a fourth surface defined by a fourth plurality  
 15 of cross-rib member which are mounted to the third plurality of cross-rib member;  
 16 and  
 17 at least one elongate reinforcement member disposed between the third and  
 18 fourth pallet members within a corresponding channel formed in at least one of the  
 19 the third and fourth surfaces for providing stiffness thereto.

20 42. The pallet assembly of claim 41 further comprising an other elongate  
 21 reinforcement member disposed between the first and second pallet members.